



**US Army Corps
of Engineers.**
Construction Engineering
Research Laboratory

Fact Sheet

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TRACK - A RAILROAD TRACK EVALUATION PROGRAM FOR WORK PLANNING

The Problem

Much of the Army's railroad network was built during World War II using secondhand track materials and expedient construction methods. The track, even by contemporary standards, was usually of light construction. Since that time, railroads on Army installations have been handling increasingly heavier cars and wheel loads. These loads are commonly well beyond the original design loads for the track.

With the Army's railroad system playing an important role in mobilization plans and in training exercises, there was concern about the ability to adequately handle the expected loading. The increasing load carrying requirements, combined with the generally light construction and variable track condition, led to the need for a way that facility managers could determine the suitability of track for mission loading - a track analysis method.

Existing track analysis methods were either overly complex for general use or too simplified to properly show the effects of changes in track design or condition. Thus, a different approach was needed which would provide a simplified method for easy use, yet with a moderately high degree of versatility and accuracy.

The Technology

Sponsored by the Army Transportation Systems Center and the Army Installation Support Center, the U. S. Army Construction Engineering Research Laboratory developed a track evaluation program (TRACK) for assessing existing track, for initial design of new track, and for determining rehabilitation alternatives. Now in its third generation, TRACK 3.0 is designed to run in a Windows operating system. It will help answer such questions as:

- Is existing track sufficient to handle expected mobilization, training, and routine loads and traffic?
- If rehabilitation is required, what changes are needed to the track to properly support mission load and traffic requirements?
- Which expanded rehabilitation alternatives provide the greatest increase in track support?
- Can the track be properly rehabilitated without replacing existing lighter weight rail?

The analysis method used in the program is based on five equations which provide values for rail bending stress, tie bending stress, tie reaction, ballast surface stress, and subgrade surface stress. The equations will handle the full range of track designs and conditions normally encountered.

TRACK is designed to help select the required input values, solve the equations, and interpret the results. Based on questions about wheel loads and track characteristics, the program automatically selects values for the equation variables and solves the equations.

The output from the equations is then shown beside suggested limiting values for the track. Thus, the user can easily see how well suited the track is to handle the required loading. The program also provides a summary report showing all the selected track characteristics and the results of the analysis.

Benefits/Savings

TRACK can help facility managers evaluate track more quickly and accurately. This capability will allow designers to specify work where it is most needed and to the degree needed. The ability to see how potential improvements (or increasing deterioration) affect the track will allow designers to select rehabilitation alternatives which provide the greatest increase in vertical load support capability. Cost-benefit analyses can then be done to narrow the alternatives in preparation for final selection and design.

Status

TRACK 2.2 is complete and available through the Army Transportation Systems Center in Omaha. The program is also available through the U. S. Army Corps of Engineers PCASE Bulletin Board at (601) 634-3386, or World Wide Web at <http://pavement.wes.army.mil/pcase.html> .

Points of Contact

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